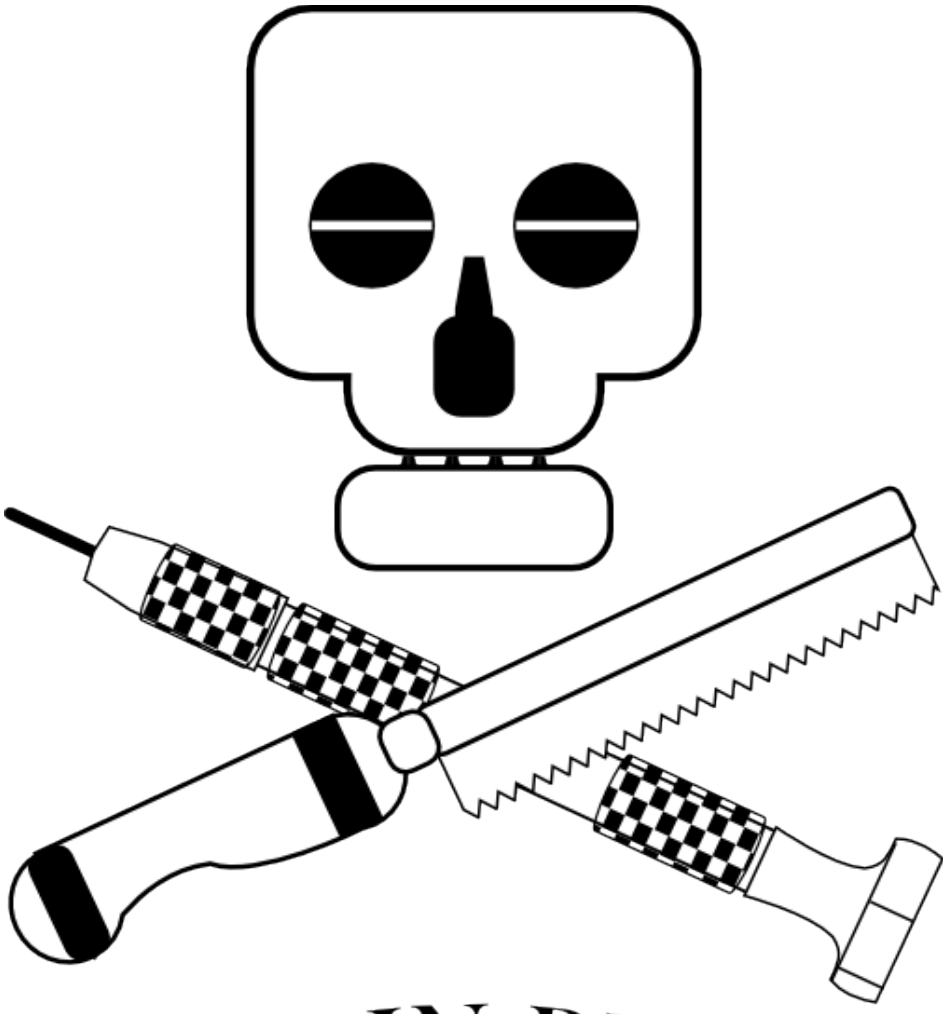
Casting Miniatures



Why Cast Miniatures and the Purpose of this Booklet

Those of you in the wargames hobby are probably struck by the cost of kits produced by some suppliers. While such suppliers claim to revere experimentation and conversion, the cost of buying kits for the sole purpose of pulling to parts becomes prohibitive.

This booklet is about giving an alternate recourse to those of you who've been told to 'put up and shut up' when shoddy business practices end up harming the hobby.

This booklet contains all the knowledge and experience to start replicating parts and in some cases, entire figures using easily acquired materials at minimal cost.

What you do with these skills is up to you, whether you want to try out a number of conversions, expand your parts collection or reproduce out of production armies.

Good luck and Have fun.

Before you Start

FAQs

Q: *How cheaply can I produce miniatures this way?*

A: Very Cheaply. In these difficult times cost is at the front of everyone's mind, so I've included an estimated 'cost per mould' in each of these sections based on my own experiences. Cost per miniature varies on the casting material you're using, but I've found I can produce miniatures for a few cents/pennies per figure.

Q: *Will I get perfect results all the time, forever?*

A: Short answer, no. Casting and moulding, like all things, is a skill. It's not particularly difficult, and if you follow this booklet it should save you months of trial and error, but until you get a feel for things like where to put vents and necking points you're gonna have some hiccups. I follow the 'third time lucky' rule. If you learn from your first two mistakes, you can produce something pretty presentable on your third try.
The financially responsible should note that factoring in the 'learning cost' of each technique still leaves it cheaper than buying first hand.

Q: *Can I cast entire sprues?*

A: I'm not sure why this gets asked so often, but here's an answer. You probably can, but you shouldn't. Plastic sprues are mass-produced from relatively cheap plastic injected into steel moulds (tools) at high temperature and pressure. The sprues serve as injection points into the moulds, and also to expand the surface area per part on the tool surface so it cools quicker and increases production turnaround.
Since we don't have access to large industrial facilities, we'll be casting at (roughly) room temperature and pressure. Bear in mind that while casting can be cheaper than first hand purchase, you still don't want to be wasting casting material on unneeded sprues.

Q: *Can cast an army of copyrighted miniatures and then sell them on for profit?*

A: Well I can't physically stop you, but no. Don't. Not only is this illegal in every country where there is a system of law, you leave a black mark on everyone who has taken up home casting for personal use. If you do something like this, you distract the corporate talking heads from the real issue and re-define everyone upset with unreasonable pricing as a thief. If a friend is looking to pick up some cheap miniatures, give him/her this pdf, or cast for him/her for free (or at cost) and give him/her the moulds.

Q: *Can I use my cast army of Cosmic Warriors in my local game store?*

A: Well- as long as you've painted them and nobody can tell they're casts. Your game store makes a living selling miniatures (I'd urge you to support your local business by buying from them whenever possible/reasonable) so turning up with a case full of unpainted cast miniatures and expecting to use their tables is like asking your favourite band to sign a pirate copy of their latest album. But if you've painted and based all your casts (and you don't have any resin casts of metal models that give you away) nobody should notice. If you're caught out, then apologise and say you bought them second hand on Ebay and repainted them.

Q: *I hate you and this guide, where do you live so I can smash your windows and sue you?*

A: 123 Fake St

Glossary of terms

Airlocking- Where air gets trapped in a mould, preventing the resin filling completely

Casting- the method of making a replica of a three dimensional object by filling a mould with a casting media

Glove mould- a one-part mould with one entrance-exit point for the casting media-casts. So named because it fits the master 'like a glove'

Greenstuff- Also known by the brand name Kneadatite- a form of flexible epoxy putty sold by some modelling stores. Cannot be sanded or drilled, but easy to work with.

Master- The initial item that is moulded so that it can be cast.

Milliput- A brand of epoxy putty. Dries rock hard and can be sanded, drilled, etc. water soluble before it dries.

Necking- A problem that occurs in glove moulds of irregular shapes. Where the cast/master cannot be ejected from the glove mould because large parts cannot fit through a substantially smaller aperture in the glove mould.

Plasticard- Thin sheets of plastic often sold in modelling stores.

Press Mould- resembles one half of a two part mould. So named because the master is 'pressed' into the moulding material. Often used for moulding particular textures or elements where only one side is seen e.g. shields, tank doors, armour plates.

Procreate- A brand of epoxy putty often said to combine the ease of use of green stuff and the toolable qualities of Milliput. Sometimes called 'grey stuff' in analogy to greenstuff.

Resin- An epoxy material, often liquid, that when mixed together hardens. There is a large number of resins with vastly different properties.

Strut- In this booklet a Strut is a thin plasticard or Milliput support used to prevent necking.

Two Part Mould- a mould made of two halves, like a coconut.

Vent- cuts in a mould to allow the media to flow or fill a mould correctly. Important in metal casting to ensure correct filling of moulds.

Three Golden Rules to remember

1) Your Masters are Sacred

A mould is only as good as the master you make it from- make sure that you file away any unsightly mould lines and don't do anything that could potentially damage your master. If you have to modify your master in order for it to be used in particular mould geometry, make sure you have a backup master or think very carefully before making any cuts. It's for this reason that I use superglue on plastic masters. Plastic glue melts and welds plastic, whereas superglue can be snapped and filed off later.

2) *Embrace the 3rd time lucky*

Nobody is perfect the first time they try something new.
The important thing is that you learn from your mistakes- find out why your mould isn't filling, or why your latex is tearing, and then next time; try to sidestep or fix the problem. Sometimes it'll take more than three attempts, sometimes it'll take less. But it can be done. And it's pretty rewarding when it goes right. Oh, and all miscasts, no matter how severe, can be fixed with the correct application of Milliput and filing.

3) Experiment is King

Nothing in this guide is immutable, aside from these three rules.
If you find that doing something slightly different yields better results, then go for it.
If you're unsure how to proceed, try a test-mould or two. All the techniques in here are cheap enough that you can afford some experimentation.
This guide is just that; a guide. Feel free to wander off the path and enjoy the view.

Casting Material

Resin

Casting has been around for a long, long time. Correspondingly, there are a lot of different methods and media. However, all but one of the techniques here uses two part resin to form the casts. Resin is easily available and cheap if you know where to find it. Unlike metal, it doesn't require moulds that can sustain high temperatures and is generally safe. There is some concern about resin dust, but using a dust mask when filing or otherwise and you should be fine.

The other thing about resin is that you have a degree of flexibility when it comes to properties like curing time and viscosity. Here's a brief rundown of what you need to know.

Viscosity- how 'runny' the resin is. Obviously you want this to be as low as possible so that your resin pours well. I've found a viscosity of about 50mPas works pretty well (this is about as viscous as milkshake). Less is better (water has a viscosity of about 1mPas).

Cure time- This one is obvious. It's also up to personal preference how long you want this- personally I use a fast cast resin because I like a fast turnaround (1 hr), though a longer cure time (6 hrs) gives you more time to remove bubbles from latex moulds, and generally have a lower viscosity and pot life.

Pot life- This is how long you have to mix the resin. It is important that the two components of resin are well mixed so that your resin cures. I mix my resin by pouring out my two components of resin, and then pouring one into the other, and pouring them back and fourth between the cups and swilling them before stirring the mix with a toothpick. As the pot life of my resin is ~3 minutes I have to do this relatively quickly to still have time to pour the resin.
BEWARE- as the resin approaches the end of its pot life it becomes more viscous, so bear this in mind when trying to fill a larger number of moulds. I've been caught out a few times when trying to fill a number of small moulds- by the time I've gotten to filling the fourth or fifth mould the remaining resin had developed a consistency similar to honey. Faster casting resins will get quite warm as they start to cure- so if the pot is heating up in your hand this is a clue you're taking too long.

Mix Ratio- Resin is sold in two parts; a resin and a hardener. Depending on the resin these may be in a 1:1 mix ratio (i.e. mix equal amounts) or a 9:10 ratio by weight or by volume (given the density of the components it's easy enough to convert one to the other). If your mix ratio deviates from 1:1 by a significant degree you may need to use a set of electronic scales to measure out your resin components.

Shelf-life- Resin does have a finite shelf-life. The label on my resin claims a 6 month life, though I've been using it for over a year now and I've only experienced a slight

increase in bubbles in my casts. There may be some merit in buying smaller quantities of resin at first.

Suppliers-
http://www.smooth-on.com/Urethane-Plastic-a/c5_1120_1209/index.html
Smooth-on has made a name for themselves in the US for resins and casting; though international delivery can be prohibitive.

http://www.creative-wholesale.com/Easy%20Cast.html
I've heard interesting thing about easycast resin, but I'm not entirely convinced. One thing to note is that it is an extremely slow casting resin (72 hours full cure time) but this does give leeway to dislodge bubbles in the resin.

http://www.tomps.com/shop/polyurethane-fast-cast-resin-p-129.html
TOMPS is an excellent supplier for UK residents, and produce good fast-cast resin cheaply. The slower variety might be more appropriate if you don't mind waiting an extra 30 mins – hour for a full cure.

This list is by no means exhaustive, and there are many more suppliers of similar products out here for those in AUS or elsewhere. Google is your friend- generally speaking you are looking for a Polyurethane resin.

A note on delivery- Due to the heat given off by resin when it cures, there is a very small risk that if containers burst in transit they can start a fire. Due to this, most places won't do standard delivery on resin and you may have to pay slightly more for a courier.

Milliput/Testing Materials

Resin is one of the most expensive components required for home casting, and given it has a finite shelf life, it's understandable if you're not rushing out to buy it and test away on my say so. So I thought I'd write a little about Milliput and testing materials.

Milliput is an excellent material with infinite uses. It fix botched or broken casts, cheaper than greenstuff and can be sanded, filed and drilled. It can also be used as a test material for casting for your first few moulds. Obviously it can't be poured, and it's pretty viscous, but that means you can't spill it and mould leakage isn't a problem. However, you don't get many casts per dollar/pound from a stick of Milliput, and unless it's in a rigid mould it is less able to capture detail than liquid resin. It also takes several hours to cure.

If all you're concerned with is testing your moulds for detail capture, and not the longevity of your casts; then molten wax is a wonderful diagnostic tool. Simply drip molten wax into your moulds and wait for it to cool before demoulding and checking for flaws.

The Liquid Latex Method

Required materials
Liquid Latex (found in most art/hobby stores)
Old Paintbrush
Superglue/Milliput
Cost per mould ~ 10c/10p

Pros	Cons
Cheap	Moulds are comparatively fragile
Easy	Preparation of Master is required
Good replication of detail	Prone to air locking
Flexible mould material	Unsuitable for large casts due to warping

Background

Latex grows on trees so it's pretty inexpensive. The liquid latex you get in the store is a solution of rubber in water and ammonia. Needless to say, latex does have a distinctive smell because of this. Latex is painted on in thin layers and then air dries, each layer typically taking about 2 hours or less to cure. The greatest strength of latex is also its greatest weakness, being flexible and fluid it captures detail with ease; however this same fluidity and flexibility means that a latex mould for anything larger than a 28mm infantry model will sag and distort without a mother mould, and latex moulds can only be made as glove moulds.

Master Geometry

As latex moulds can only be made as glove moulds, it's important to prepare the master such that the glove mould will release correctly. The two major problems I have found are through-holes and necking.
If a glove mould is made of a master which has a hole or aperture that penetrates the model, the glove mould will not release. The geometry of this is difficult to explain, however, you can demonstrate this by putting a glove on one hand and pinching your thumb and forefinger tightly together. It is impossible to remove your glove without opening your thumb and forefinger. This can be avoided in two ways, by filling the holes in the master with Milliput or plasticard, or by casting the master in parts (**fig 1**)

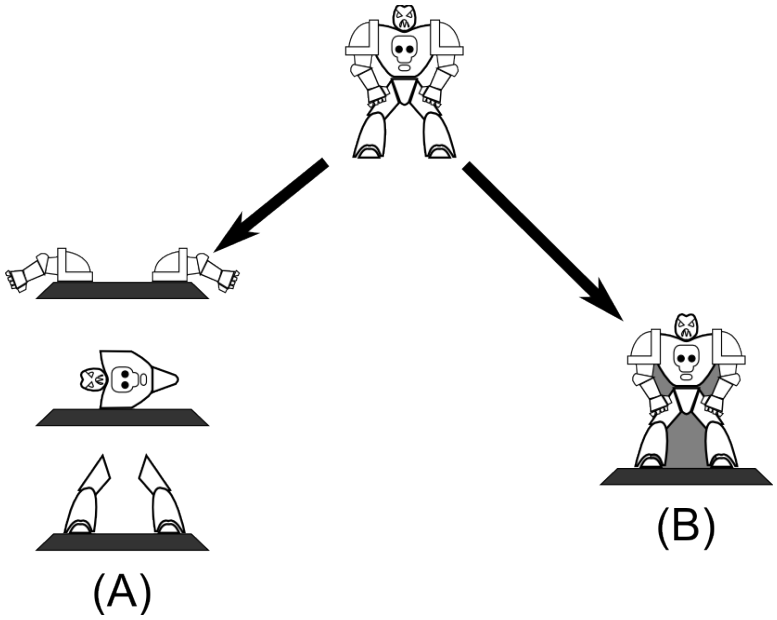


Figure 1: This generic space warrior can be cast in latex in two ways- (A) in parts or (B) where the gaps have been filled with Milliput/plasticard (grey)

With glove moulds, the master or cast must exit through the entry port for the resin, and while latex stretches, you can only abuse it so much before it tears. This can be a problem when making moulds of masters with interesting geometry with several narrow waists which can flex and tear, or in extreme cases, damage the master. I've found that this problem can be solved with Milliput or plasticard support struts (**fig 2**)

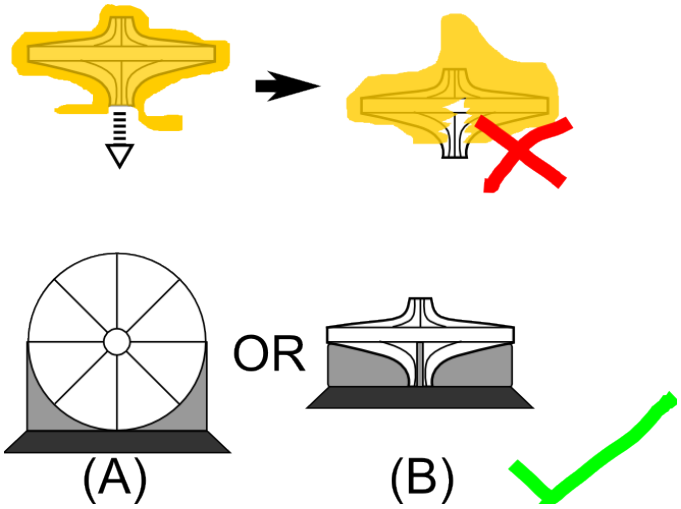
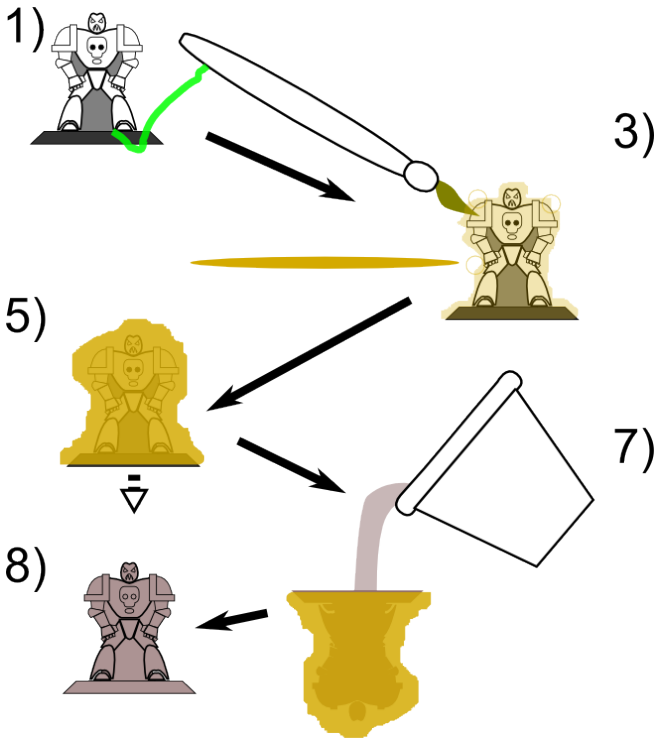


Figure 2: Necking- this generic UFO is prone to necking due to its wide midsection, using supporting struts during moulding prevents necking

Method



1) Prepare your master, making sure to account for any holes or potential necking points
2) Affix the master to a non-porous base, such as a tile or a plasticard sheet. Make sure that the point affixed to the base is innocuous.
3) Paint on a layer of latex, and wait up to 2 hours for it to cure. Be sure to pop all bubbles in the first few layers with a toothpick, as bubbles will delete detail where they set. Try keeping your brush in water between layers to prevent latex build-up.
4) Repeat step 3 AT LEAST eight times. Addition of latex thickener may help speed up the addition of the last few layers, though over thickening can weaken the mould. Not every layer needs to be applied as soon as the previous one is cured; HOWEVER each layer needs to be applied within 24 hours of the last.
5) When the final layer is complete (my guide is that the fine details are obscured and the layers of latex are starting to look opaque/foggy yellow) dust the outside of your moulds with talcum powder (this prevents the moulds sticking to themselves fresh latex LOVES to stick to other fresh latex), and then demould your masters. Do this by gently pulling the latex away from your master starting from the base. **DO NOT** use an oil based lubricant on latex. Oil dissolves latex. This is another good reason to make sure that you mix your resin correctly; improperly mixed resin can secrete oily stuff while it cures and rots your moulds.
6) This step is optional, but I tend to do it anyway, leave your mould an hour before using it to cast, just to make sure it is fully cured.
7) When casting, pinch your latex mould and slowly pour in your resin as you 'unpinch' your mould. This helps to prevent 'airlocks' (bubbles) forming inside your cast. Some gentle squeezing and tapping to get rid of the remainder of bubbles works well here. You may then leave your casts to cure. I use an egg box to keep mine upright.
8) When not in use, store your latex moulds in an old airtight jar or similar to prevent damage.

Common pitfalls

Q: *My mould tore when removing my master*
A: Check your master for potential necking points and through-holes. Compensate for these and use more layers of latex next time

Q: *My mould just won't fill properly!*
A: Look at the structure of your mould and master- and imagine a liquid flowing in. There are potentially places where air might get trapped (airlock). When pouring your mould, try filling your mould, then pinching it to squeeze all the air and resin out. If you see any bubbles, pop them. When you release the mould it should 'suck' all the resin back into the places where air was trapped. Obviously this works when you have a rim around your mould to prevent resin spilling everywhere (**fig Z**)
Alternately, make the mould again in smaller parts or add plasticard/Milliput struts to prevent airlock

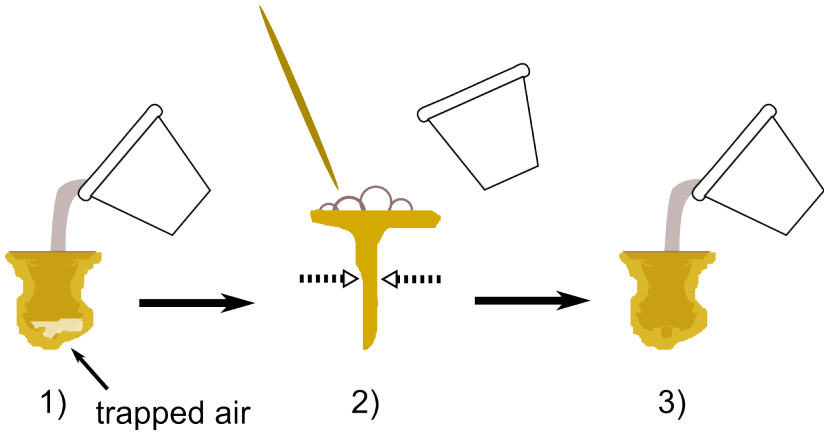


Figure 3: Air bubbles can get trapped in glove moulds- it is possible to squeeze them out and pop them with a toothpick if you are careful

Q: *My mould turns out models that are subtly warped/distorted/larger or smaller than usual.*
A: you are probably trying to cast too large a piece at once and the mould is sagging or buckling. Try casting smaller parts and/or consider silicone moulds instead.

The Silicone Method

Required materials
100% Silicone Caulk/Sealant (any hardware store)
Acrylic Paint (any brand will do)
Glycerol (found in most pharmacies)
Modelling Clay
Plastic Construction Blocks
Vaseline Petroleum Jelly (found in most pharmacies)
White Spirit (found in hardware stores)
Cost per mould ~ $1/ £1 (dependent on size of mould)

Pros	Cons
Robust moulds	Material is expensive compared to latex
Can cope with minor undercuts/holes	Potential mould leakage (lots of flash)
Suitable for larger parts (i.e. tank parts)	Short working time with mould material
Can dictate flow of resin with vents	Strong vinegar smell for a while

Background

If you've ever been involved in household repairs or DIY, you've seen silicone sealant. It's what's used to make some bathroom fittings watertight to the walls, and used when fitting windows. A wide variety of moulds also use silicone as their key component so surely there's a vast supply of moulding material just waiting to be tapped? Sort of. Silicone in the tube cures in an interesting way; it forms a thin watertight cured layer, and then generally stops curing. Lots of people have tried to get around this, and quite a few with more chemistry knowledge than I have found a solution. Using additives it is possible to cure arbitrarily thick layers of silicone. Silicone cured in this way is flexible enough to demould from, but rigid enough that it won't collapse under its own weight like latex will in larger sizes. This guide describes the procedure for making two part moulds, which has served me well for moulding relatively complex masters; however, there is nothing stopping you using silicone sealant as a press mould or a glove mould. Just be wary that it's much easier to extract a master from a latex glove mould than a silicone one.

Additives and master orientation

Silicone sealant cures by absorbing water. In the raw case, the outer surface of a blob of silicone absorbs water vapour from the atmosphere and cures. This outer surface then becomes watertight, and prevents the inside of the silicone from curing by blocking the atmospheric moisture from penetrating into the inner layers.
While first instinct to circumvent this is to mix water into the silicone, this weakens the mould severely. The addition of a few drops of acrylic paint and glycerol, however, distributes moisture throughout the silicone without weakening it. The acrylic paint also

lets you see if your silicone is correctly mixed. It's worthwhile noting that one of the by-products of the silicone curing reaction is acetic acid. This gives off a pungent smell not unlike vinegar, and is a helpful sign that your additives are taking effect (fig **4**).

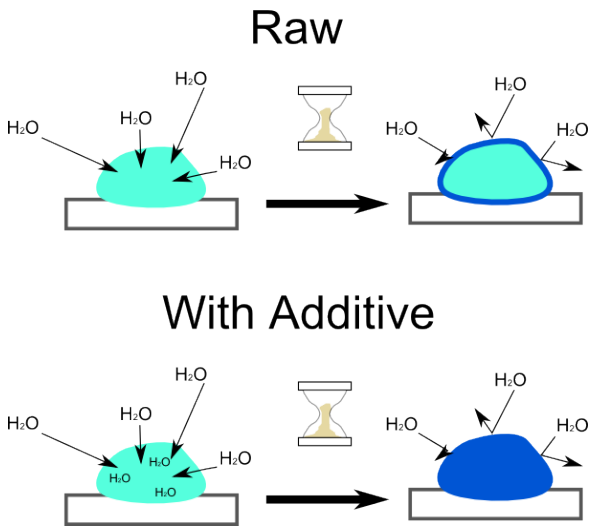


Figure 4: Raw silicone cures by absorbing water from the atmosphere, this forms a waterproof cured layer of silicone on the surface of any attempted moulds preventing further curing. This can be prevented by introducing water-based additives into the silicone

While two part moulds are much more forgiving than glove moulds in terms of geometry, it still pays to think a little before choosing a mould line for your master. Generally speaking the mould line should bisect the master such that it has the greatest cross sectional area through the master (fig **5**). Looking at the mould lines in commercial miniatures should help you visualise this. Note that the mould separation plane isn't always flat.

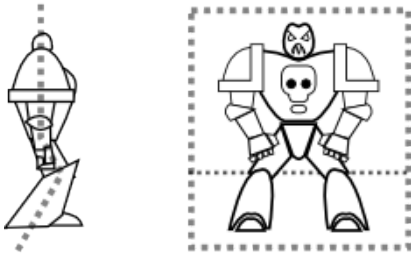


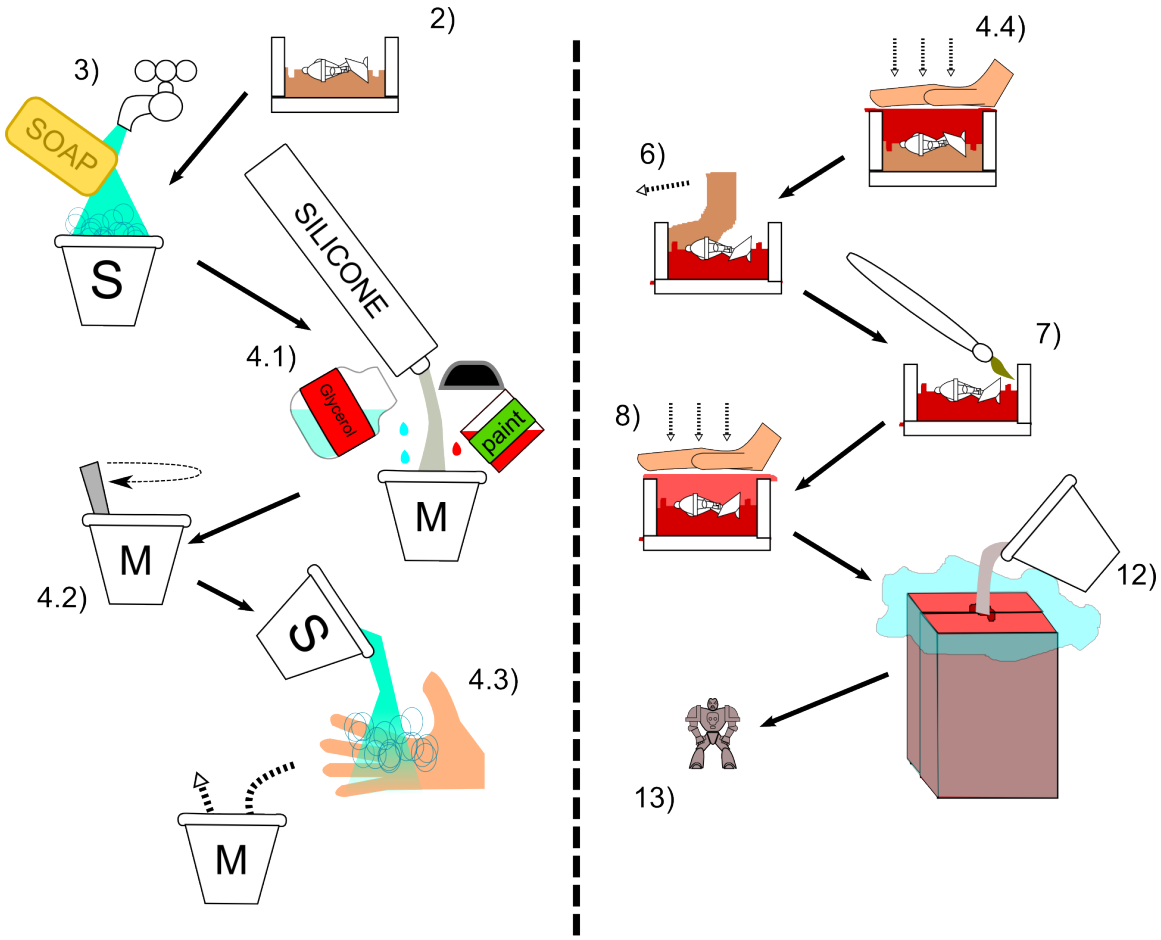
Figure 5: the mould-plane for the generic space-soldier intersects the greatest cross sectional area

This being said, a sub-optimal placement of the mould plane won't render a silicone mould useless, so don't worry too much about it.

Method

1) Make a mould box out of your unbranded plastic construction blocks, about four centimetres or just less than two inches should be plenty for most of the thing you'll be moulding. The box should be deep enough to hold your master plus the thickness of silicone mould on all sides (about 5mm or about 1/5 of an inch should do)
2) Fill the mould box half way with modelling clay and bed the master in the clay up to the mould line. Key the clay (create indents with the end of a paintbrush or bed in a marble or something) so that your mould halves won't slip when held together.
3) Prepare your materials before you start mixing the silicone. Get a few plastic cups, fill one with soapy water, get disposable plastic spoon or other mixing implement, have your acrylic paint and glycerol ready to pour, and load your silicone caulk into a caulking gun (if you have one, if not, use a hammer or something else to push the base and squeeze out the silicone). The next step can be messy and requires you work fairly quickly, so it's worthwhile thinking about doing this outside.
4) Take the cap off the silicone, and squeeze about 2-4 pulls of the caulking gun into an empty plastic cup. Dribble a drop or two of glycerol and acrylic paint into the silicone cup and mix quickly. **DO NOT ADD MORE GLYCEROL OR PAINT**. This will weaken your mould. The silicone will start to stink of vinegar. When the silicone looks well mixed (even colour) dip your hands into the soapy water (douse them in it if you must), scoop up as much of the silicone mix as you can and press it firmly into your mould box. If the silicone starts to stick to your hands douse them in more soapy water. If you have made too much silicone mix, then try pressing it into your mould box anyway, the more firmly you force the silicone into the mould-box, the better. Captures more detail that way. Ideally the mould box should be slightly over-flowing with silicone mix. (This will produce a frilly fringe around the edge of the mould due to the nubs on the plastic construction blocks).
5) Leave your mould half somewhere warm that you don't mind smelling of vinegar for about four hours to cure.
6) Pop the clay and mould half out of the mould box, and GENTLY peel off the modelling clay, taking care not to accidentally remove your masters.
7) Thin down some Vaseline with white spirits, and paint the mix onto the inside facing half of the silicone. This is your release agent. Don't worry about putting release agent on your masters, they should be fine, all you'll do is obscure detail in the final mould. The important thing is to make sure the two halves of the silicone mould don't stick to each other.
8) Repeat step s 3-5 and all the frantic mess it implies for the second half of the mould.
9) Demould your masters. Do this by gently separating the two silicone mould halves. The silicone may be initially difficult to separate, but once you get started, the rest of the mould should separate easily.

10) Cut vents in your mould halves with a pair of scissors or craft knife. Due to the nature of gravity, it's normally a good idea to have the vents mostly vertical so that the resin flows into the mould easily.
11) There is a significant chance your moulds will leak. To prevent resin pissing all over your floor and irreparably damaging everything it touches I suggest placing your moulds in a plastic bag, and using parcel tape to hold the plastic bag TIGHT to the bottom and sides of your mould. If done correctly you should have a watertight 'second skin' to your mould that prevents leakage and also holds it together.
12) Pour your moulds, and leave to cure. When cured, cut the moulds out their leak-proof skins and demould your casts in the same manner as you did your masters.
13) Use clippers and a file to remove flash.



Common Pitfalls

Q: *My moulds didn't capture surface detail!*
A: you probably didn't use enough sealant mix. The key is to press it FIRMLY into the mould box

Q: I don't have any unbranded plastic construction blocks, what do I make my mould boxes out of?
A: Something non-porous. I've heard cardboard *can* work well, but only if it's glossy and not raw. I've got doubts about if it could handle the rough treatment of making the mould halves. Varnished wood (MDF), tiles and plastic would probably all work, but are probably expensive and fragile if you're making moulds of different dimensions.

Q: *My moulds aren't filling correctly! I'm getting lots of leakage*
A: These two problems can be caused by the same thing, which is not having your waterproofing tight enough about the mould. When I say 'second skin' I really do mean a tight-fitting layer. If moulds still aren't filling correctly or no leakage is present, then there is a good chance that you need to add more vents to allow resin to flow into areas where it might not normally reach.

RTV kits

The savvier of you will recognise that a lot of this section looks like a guide to producing casts of various items with RTV silicone. And you'd be right! However, I don't cover RTV silicone in this booklet. While RTV does produce amazing quality moulds, it also costs a lot of money. In addition, if you want to get the best out of your RTV you're probably going to have to invest in a degassing chamber to get rid of bubbles. This very rapidly moves out of the territory of this booklet, i.e. producing miniatures at home with common materials, cheaply and easily (even if you don't have top notch technical knowledge). However, if you want to try it out, don't let me stop you. The same general principles apply.

Ink washes were used to bring out the detail in some of the photos. It should be noted that resin does not readily take paint raw.

The Re-Usable Moulding Material Method

Required materials
Re-usable Moulding material (Oyumaru)
Epoxy Putty (Milliput/greenstuff/procreate)
Cost per mould – theoretically $0/£0

Pros	Cons
Extremely cheap (reusable)	Unsuitable for resin casting
Robust solid moulds	Expensive cost per cast
Did I mention its reusable?	Long cure time for casts
KAWAII DESU ^_^	Heat sensitive

Background

There's been a lot of buzz about Oyumaru lately, most of it extremely favourable. Oyumaru is an extremely cheap re-usable moulding material from Japan; if I had to guess what it's made of, I'd say it's a low temperature melting point plastic. You dip a block of this stuff in hot (near boiling) water for a few minutes and you have a material that's soft and mouldable (the consistency of chewing gum) and captures excellent amounts of detail. In a further few minutes the stuff re-solidifies into a rigid structure which you can use to produce casts. This sounds great, however, due to the amount of heat given out in the resin curing reaction it is not suitable for resin casting. The heat of curing deforms the mould.

However, the material is still suitable for use with epoxy putties such as Milliput and its brethren. Just note that you can't use the old trick of popping the Milliput under a desk lamp to speed up curing for the same reason as before- heat based deformation. So any casts you make with this will have to sit out the full Milliput cure time.

That being said, at a few dollars for a pack of six you get a re-usable and idiot-proof moulding material that's perfect for making small runs of casts, whether they're two part, press, or glove moulds.

Method

1) Boil some water, and pour the boiling water into a mug
2) Drop the Oyumaru stick (or sticks) into the mug and let them sit for a few minutes.
3) Remove the Oyumaru sticks with a spoon or tongs, and dry them off. Mould them round your masters as you see fit, for two part moulds either fully enclose your master and cut it out of the cold Oyumaru, or let one half cool and add another afterwards.
4) Pop your master out the Oyumaru- and fill the resultant mould with your choice of epoxy putty.
5) Leave your cast to cure (preferably overnight)
6) Pop out your finished cast
7) Once you're tired of your mould, simply dunk it in hot water again to soften it up and re-use.

Common Pitfalls

I seriously don't know how you can fuck this up. Really. If you've managed to eat it or something maybe go to a doctor and tell him what a moron you are so he can euthanize you.

Afterword

If you have read this booklet cover to cover, you'll know everything I do about casting miniatures on a tight budget. I hope you find this useful in breathing life back into tabletop games and the modelling that it entails.

The best thing you can do if you appreciate this guide is to share it. Spread it like herpes, send it to your friends, give printouts to your friends who don't have computers, put it on megaupload, post it on forums. And then, after that, give advice to anyone who wants to get started, share what you've learned. If you discover any new groundbreaking technique let everyone know and keep home casting alive.

Show everyone that it's possible to be able to play wargames on a budget, and pour yourself a beer on me.